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- 1 2. The data network of claim 1 wherein the first and second transmission
2 channels are, respectively, a low latency channel for transmitting data packets
3 meeting a low latency criteria, and a high bandwidth channel for transmitting data
4 packets meeting a high bandwidth criteria.

- 1 4. The data network recited in claim 1 wherein one of the first and second
2 transmission channels is coupled to transmit control information relating to network
3 protocol according to the predetermined criteria.

- $\text{SUB } A' \rangle$

5. The data network recited in claim 1 wherein the predetermined criteria includes at least one selected from the set of a size of a data information packet, a type of operation associated with the data information packet, a latency budget for the data information packet, security needs of the data information packet and reliability needs of the data information packet.

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1 7. The data network recited in claim 6, wherein the software program is
2 one of a user program and a system program.

1 8. The data network recited in claim 5, wherein the type of operation
2 includes a synchronization operation.

1 9. The data network recited in claim 8, wherein the synchronization
2 operation includes at least one of a lock operation, an atomic read-modify-write
3 operation, and a fetch-and-increment operation.

1 10. The data network recited in claim 1 wherein the data network is a
2 switched data network having at least one switch for each channel.

1 11. The data network recited in claim 1 wherein at least one of the sending
2 node and the receiving node includes a plurality of buffer descriptors identifying
3 memory segments containing data.

1 12. The data network recited in claim 1 wherein the sending node and the
2 receiving node are nodes within a cluster network.

1 13. The data network as recited in claim 2 wherein a node includes
2 separate send and receive buffers for the first and second transmission channels.

1 14. The data network as recited in claim 2 further comprising:
2 a scheduler circuit for the high bandwidth channel coupled to the high
3 bandwidth channel and low latency channel; and wherein the scheduler
4 circuit is coupled to receive a request sent into the low latency channel,
5 the request requesting permission to transmit a packet over the high
6 bandwidth channel, the scheduler logic responsive to the request to
7 provide a grant indication over the low latency channel indicating the
8 request was granted.

1 22. A method for transmitting data traffic between at least a first and
2 second node in a network having at least a first and second transmission channel, the
3 method comprising:

4 organizing the data traffic prior to transmission across the network into at least
5 a first and second group according to predetermined criteria; and
6 transmitting the first group of the data traffic over the first transmission
7 channel and the second group of the data traffic over the second
8 transmission channel.

1 23. The method recited in claim 22 wherein the first and second
2 transmission channels are independent.

1 24. The method recited in claim 22 further comprising:
2 transmitting control information relating to network protocol over one of the
3 first and second transmission channels along with one of the first and
4 second groups of data traffic.

1 25. The method recited in claim 24 wherein the first and second
2 transmission channels are respectively a high bandwidth channel and a low latency
3 channel, and wherein the first group of data traffic is transmitted over the low latency
4 channel, the low latency channel for transmitting data packets meeting a low latency
5 criteria; and wherein the second group of data traffic is transmitted over the a high
6 bandwidth channel, the high bandwidth channel for transmitting data packets meeting
7 a high bandwidth criteria.

1 26. The method recited in claim 25 further comprising:
2 scheduling transmittal of data traffic across the high bandwidth channel using
3 control information transmitted over the low latency channel.

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2 27. The method recited in claim 26 further comprising:
3 transferring the control information across the low latency channel with a
higher priority than the first group of data traffic transferred across the

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1 34. The apparatus recited in claim 33 further comprising:
2 means for transmitting the control information across one of the transmission
3 channels.

1 35. The apparatus recited in claim 33 further comprising:
2 means for transmitting the first group of the data traffic having low latency
3 characteristics; and
4 means for transmitting the second group of the data traffic having high
5 bandwidth characteristics.

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